

## **Remarks**

Claims 1-2, 4-11, and 13-24 are currently pending in the Application. By this Amendment, claims 1, 14-16, and 20-21 have been amended, claims 2, 10-11, and 13 have been cancelled, and new claims 25-29 have been added. After entry of the Amendment, claims 1, 4-9, and 14-29 remain pending.

### **I. Claim Rejections – 35 U.S.C. § 112, second paragraph**

Claims 1-2, 4-11, and 13-24 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Particularly, the Examiner notes that a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite. The Examiner argues that claim 1 recites the broad limitation “a first and second flexible link,” along with the narrow limitation “particularly of the belt type.” The Examiner argues that claim 13 recites the broad limitation “a first helical connection,” along with the narrow limitation “particularly a screw thread or helical cam path.” Claim 1 has been amended to remove the narrow limitations from this claim. Claim 13 has been canceled. Claims 14, 15, and 20 have also been amended to remove similar narrow limitations. The subject matter of the narrow limitations has been added as new dependent claims 25-29. Therefore, Applicant respectfully requests withdrawal of the § 112, second paragraph rejections.

### **II. Claim Rejections – 35 U.S.C. § 103**

#### **A. Claims 1 and 5**

Claims 1 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. (U.S. Published Application 2003/0224888 A1) in view of Anderson et al. (U.S. Patent No. 4,708,229).

As amended, independent claim 1 recites in part:

A transmission system comprising: . . .

a two-state coupling device, wherein a first state of the two-state coupling device corresponds to a phase for starting the engine, in which the shaft (1) of the alternator-starter (ATD) drives the crankshaft (V) of the engine (M) with a first transmission ratio, and a second state of the two-state coupling device corresponds to a phase in which the crankshaft (V) of the engine (M) drives the shaft (1) of the alternator-starter (ATD) with a second transmission ratio, and in that the first transmission ratio is higher than the second transmission ratio; . . .

wherein the two-state coupling device is arranged between the first (2) and the second (3) pulleys and includes at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD); and

wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10'') bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12).

Applicant respectfully submits that Wilder et al. in view of Anderson et al. fails to disclose the features of amended claim 1. For example, neither Wilder et al. nor Anderson et al. disclose "at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD)," as recited in claim 1.

The Examiner concedes that “Wilder et al. fails to explicitly disclose the two-state coupling device is arranged between the first and the second pulleys and includes at least one coupling element that moves longitudinally parallel to the axis of the shaft of the alternator-starter between two positions corresponding to the first and second coupling device states respectively.” (Office action, p. 5). Therefore, Wilder et al. cannot disclose the additional feature of the coupling element moving “as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD),” as recited in claim 1.

Anderson et al. does not remedy the deficiencies of Wilder et al. Anderson et al. fails to disclose “at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD),” as recited in claim 1.

Anderson et al. discloses a double acting clutch that switches between modes of operation by moving a plate with a hydraulic system with a spring return. As shown in Anderson et al. Fig. 1 and explained in the Detailed Description, to couple the pulley 12 to the input shaft, pressurized fuel is drained from the activation chamber 80, thereby allowing springs 50 to move plate 40 against pulley 12. (Col. 3, lns 16-22). To couple pulley 14 to the input shaft 16, pressurized fuel is permitted to enter the activation chamber 80 which in turn expands the diaphragm 60 urging the piston 54 against the annular land 52, and thereby moving plate 40 against pulley 14. (Col. 3, lns 23-31). Thus, the plate 40 of Anderson moves as a function of either the hydraulic pressure of the pressurized fuel or the force exerted by the springs 50. In contrast, as recited in claim 1, the “coupling element (10) . . . moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD).” Therefore, Anderson et al. does not disclose the coupling element of amended claim 1.

Moreover, Anderson et al. teaches away from a two-state coupling device, “wherein a first state of the two-state coupling device corresponds to a phase for starting the engine, in which the shaft (1) of the alternator-starter (ATD) drives the crankshaft (V) of the engine (M) with a first transmission ratio, and a second state of the two-state coupling device corresponds to a phase in which the crankshaft (V) of the engine (M) drives the shaft (1) of the alternator-starter (ATD) with a second transmission ratio.”

Anderson et al. teaches “an accessory drive ... [that permits] the *engine driven accessories* to be driven through either of two belt drives.” (Col. 1, lns 24-26) (emphasis added). In describing *engine driven accessories*, Anderson et al. explains that “[t]hese accessories exert a parasitic drag on the vehicle engine which is especially evident during periods of . . . engine start-up.” (Col. 1, lns 14-16). The alternator-starter of the claimed invention cannot be considered an *engine driven accessory*. Rather, the alternator-starter is an *engine driving accessory*, because when functioning as a starter, the alternator-starter supplies the torque that rotates the crankshaft of the engine to start the engine. Furthermore, the alternator-starter cannot exert a parasitic drag on the engine during engine start-up because the alternator-starter is supplying the torque to rotate the crankshaft of the engine. Accordingly, Anderson et al. teaches away from the Applicant’s invention as claimed in amended claim 1 and is therefore not an appropriate reference to combine with Wilder et al. in a § 103 rejection.

Additionally, Wilder et al. and Anderson et al. fail to disclose a transmission system “wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10'') bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12),” as recited in claim 1.

For at least the reasons above, amended claim 1 is patentable over Wilder et al. and Anderson et al. Claim 5 depends from claim 1 and is also allowable for at least the reasons above and because it recites additional patentable subject matter.

## B. Claim 1

Claim 1 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. (U.S. Patent No. 5,305,719).

For the reasons explained above, Wilder et al. fails to disclose the limitations of amended claim 1.

Further, Clark et al. fails to disclose “at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD),” as recited in claim 1. As shown in Figs. 14-17B and explained in the Detailed Description, Clark et al. discloses a ferrous metal locking pin 150 that can be *magnetically moved* axially in opposite directions to lock either the friction discs 124 and 132 together, or discs 134 and 112. (Col. 6, lns 40-48). Thus, the locking pin 150 of Clark et al. *magnetically moves* between either a position locking the discs 124 and 132 together or a position locking the discs 134 and 112 together. In contrast, the coupling element of amended claim 1 “moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD).” Therefore, Clark et al. does not disclose the coupling element of amended claim 1.

Additionally, Wilder et al. and Clark et al. fail to disclose a transmission system “wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10'') bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12),” as recited in claim 1.

For at least the reasons above, amended claim 1 is patentable over Wilder et al. and Clark et al.

**C. Claims 2, 4, 6-9, 10-11, 13-22, and 24**

Claims 6-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Anderson et al. and further in view of Mueller (U.S. Patent No. 4,526,257). Claims 2, 4, and 10-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and further in view of Man et al. (U.S. Published Application 2002/0117860 A1). Claims 6-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and further in view of Mueller. Claims 13-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and further in view of Lanigan et al. (U.S. Patent No. 3,200,919). Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and Lanigan et al., and further in view of Mueller. Claims 18-19 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and Lanigan et al., and further in view of Heimark (U.S. Patent No. 5,909,075). Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and Lanigan et al., and further in view of Seung et al. (U.S. Patent No. 4,662,861). Claims 22 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. in view of Clark et al. and Mueller, and further in view of Man et al.

For at least the reasons above, amended claim 1 is patentable over Wilder et al., Anderson et al., and Clark et al. None of Mueller, Man et al., Lanigan et al., Heimark, and Seung et al. alone or in combination remedy the deficiencies of Wilder et al., Anderson et al., and Clark et al. discussed above in reference to claim 1. Claims 2, 10-11, and 13 are canceled in this amendment rendering the rejections moot with respect to these claims. Claims 4, 6-9, 14-22, and 24 depend from claim 1 and are also allowable for at least the reasons above and because they recite additional patentable subject matter.

**III. New Claims**

New claims 25-29 depend from claim 1 and are also allowable for at least the reasons above and because they recite additional patentable subject matter.

**IV. Conclusion**

In light of the above, Applicant respectfully requests entry of the Amendment and allowance of claims 1, 4-9, and 14-29. The Examiner is invited to contact the undersigned at the below number to further discuss this application.

Respectfully submitted,



Carlo M. Cotrone

Reg. No. 48,715

File No. 072211-9023-00  
Michael Best & Friedrich LLP  
100 East Wisconsin Avenue  
Suite 3300  
Milwaukee, Wisconsin 53202-4108  
414.271.6560